

REMARKS

Claims 13, 14 and 16 are pending in this application, all of which have been amended.

Claims 1-12, 15 and 17-19 have been canceled. No new claims have been added.

The Examiner has maintained from the previous Office Action the 35 U.S.C. § 103(a) rejection of claims 13, 14 and 16 as unpatentable over Ishida et al. in view of Yamakage (both previously applied).

Applicants respectfully traverse this rejection.

As noted in Applicants' previous responses filed on June 9, 2005 and July 1, 2004:

In Yamakage, the heat is dissipated directly from the metal block 2 having the greater volume and the greater mass, to the surrounding space, and some elements located around the metal block 2 may be affected by the heat, as well as the amount of the heat conveyed from the metal block 2 to the fins 6 in the duct becoming smaller.

In the present invention, the heat receiving plate (which is considerably thin relative to the metal block 2) is arranged outside the duct and near the duct, and some elements located around the heat receiving plate may not be affected by the heat, as well as the amount of the heat conveyed from the heat receiving plate to the fins (which are large relative to the fins of Yamakage) in the duct becoming large. Accordingly, the heat generated by the heat generating element is effectively conveyed to a remote plate via the heat receiving plate, the heat pipes, the fins and the duct.

Therefore, the heat pipe cooler of the invention can effectively cool the semiconductor element having a very densely designed circuit, without affecting an element located around the semiconductor element. The duct can be designed with more freedom.

Claim 13 recites that the heat receiving plate is arranged entirely outside the ventilation duct, which the Examiner admits is not disclosed in the references but is nevertheless considered by the Examiner to be a mere rearrangement of parts which “does not impart patentability especially about the operation of the device being modified thereby in an unexpected manner.”

Applicants respectfully disagree. As noted in Applicants’ previous response of June 9, 2005, because the heat receiving plate is arranged entirely outside the ventilation duct, the heat pipe cooler of the present invention can effectively cool the semiconductor element having a very densely designed circuit, without affecting an element located around the semiconductor element.

Accordingly, claim 13 has been amended to clarify the novelty of the claimed arrangement of the heat receiving plate being arranged entirely outside the ventilation duct.

According to the present invention as claimed in claim 13, as amended, the heat receiving plate is arranged entirely outside the ventilation duct, as shown in FIGS. 13 and 14.

If the heat receiving plate is constituted as a part of the duct itself, as in Ishida et al., the duct is wholly heated and the temperature thereof becomes high so that the entire environment of the duct is raised to a high temperature. Therefore, in a highly sophisticated electronics unit including many included parts, peripheral members, such as PKGs, may be arranged adjacently to the duct. Thus, these peripheral members may be heated. A heat insulation material may be wound around the duct so as to restrict the temperature increase.

However, according to the present invention, the heat receiving plate is separate from the ventilation duct, so that only the element attached to the heat receiving plate is effectively cooled.

Therefore, claims 13, 14 and 16 are patentably distinguishable over the cited prior art.

Thus, the 35 U.S.C. § 103(a) rejection of claims 13, 14 and 16, as amended, should be withdrawn.

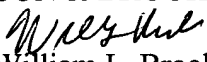
In view of the aforementioned amendments and accompanying remarks, claims 13, 14 and 16, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Petition for Extension of Time
Check in the amount of \$120.00